

Cardiovascular Diseases in the Elderly in a Consultant Outpatient Cardiac Clinic

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ABSTRACT: **Background:** The incidence of cardiovascular disease increases with age, and visits by elderly patients to the outpatient cardiac clinic are becoming more frequent. **Objectives:** To characterize cardiovascular pathologies of patients 70 years of age and over who visit the outpatient cardiac clinic. **Methods:** We investigated cardiovascular pathologies, risk factors, and medications in new patients over a 2 month period. **Results:** The study population comprised 290 patients: 139 (47.9%) were older than 70 years. Among the cardiovascular pathologies, aortic stenosis, angina pectoris, congestive heart failure, s/p coronary artery bypass graft, and stroke were more frequent in the elderly patients than in those under age 70. Among the risk factors for ischemic heart disease, only hypertension was more frequent in the elderly population, whereas fewer in this group were active smokers. The mean number of medications administered was 3.51 ± 1.63 among the elderly patients compared to 1.99 ± 1.71 among the younger ones ($P = 0.0001$). Beta-blockers were the most frequently used cardiovascular drugs both in the elderly (59.7%) and in the younger patients (43%) ($P = 0.0046$). **Conclusions:** Patients over age 70 represent about half the visits in our outpatient clinic. Their multiple cardiovascular pathologies and therapeutic requirements raise the issue of developing the cardiology service to meet the special needs of geriatric patients.

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KEY WORDS: elderly, cardiovascular diseases, outpatient cardiac clinic, polypharmacy, cardiac risk factors

Patients 70 years old or over represent a small but rapidly growing age group. In 2003, they comprised 7% of the Israeli population, with an increment of 1.1% over the period 1989 to 2003 [1]. Moreover, cardiovascular diseases are the most common cause of morbidity in this age group [2], and elderly patients exhibiting these symptoms are arriving with increasing frequency at outpatient cardiac clinics. The aim of the present study was to compare the cardiovascular dis-

eases in the elderly (70 years or older) with those of younger patients visiting our outpatient cardiac clinic.

PATIENTS AND METHODS

We studied the cardiovascular pathologies, cardiovascular risk factors and medications of new patients at three outpatient clinics of Clalit Health Services, the largest of four health management organizations in Israel, over a 2 month period, according to age. Statistical analysis was performed using the chi-square test and the independent *t*-test. $P < 0.05$ was considered significant.

RESULTS

During the period of the study 290 patients (137 women, 153 men) visited our clinics; 139 (47.9%) were older than 70 (60 females and 79 males) and 151 (77 females and 74 males) were younger. Patients are listed according to their age in Figure 1. Their cardiovascular pathologies and risk factors are summarized in Table 1.

In 14 of the patients older than 70 all the aortic valves were tricuspid and calcified, while in 2 of the patients younger than 70 one aortic valve was bicuspid. The medications used by the patients are presented in Table 2.

DISCUSSION

Cardiovascular disease is a growing problem in the elderly because of the increased size of the aged population. In our outpatient cardiologic clinic, patients over 70 years old constitute half of the patient population. At present, the incidence of cardiovascular disease in older persons is about three times higher than among younger patients. Furthermore, with the disproportionate growth of the elderly population worldwide, the number of older patients with cardiovascular disease will expand considerably [3].

Ischemic coronary artery disease was found in most of our older patients, and to a lesser extent in the younger as well. This is in accord with the prevalence and annual incidence of overt coronary artery disease which increases substantially with age [4]. Among the valvular heart diseases,

Table 1. Cardiovascular pathologies and risk factors

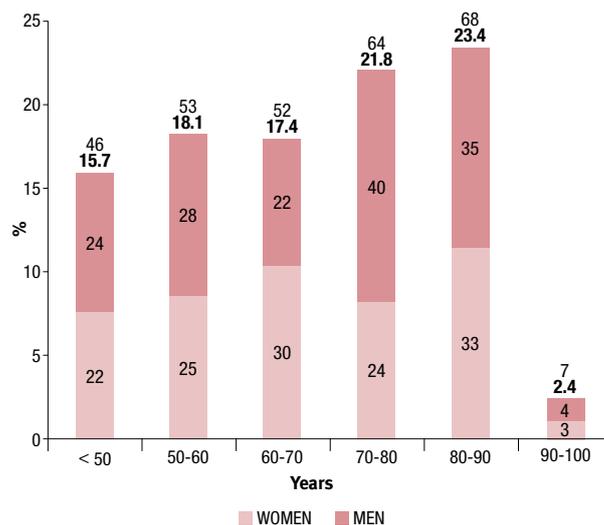
Cardiovascular pathologies and risk factors	139 patients > age 70 (%)	151 patients < age 70 (%)	P
Significant aortic stenosis	14 (10)	2 (1.3)	0.0011
Aortic regurgitation	2 (1/4)	–	0.1391
Mitral valve disease	8 (5.7)	12 (7.9)	0.4618
Angina pectoris	36 (25.9)	16 (10.6)	0.0007
Congestive heart failure	21 (15.1)	4 (2.6)	0.0002
Paroxysmal atrial fibrillation	24 (17.3)	8 (5.3)	0.0012
Permanent atrial fibrillation	14(10.1)	4 (2.6)	0.0089
S/P aortic valve replacement	6 (4.3)	2 (1.3)	0.1201
S/P coronary artery bypass	26 (18.7)	8 (5.3)	0.0004
S/P myocardial infarction	35 (25.2)	26 (17.2)	0.0965
S/P cerebral vascular accident	19 (13.7)	6 (4)	0.0033
Atypical chest pain	8 (5.7)	30 (19.9)	0.0004
Palpitations	9 (6.5)	18 (11.9)	0.1109
Hypertension	102 (73.4)	50 (33)	0.0001
Hypercholesterolemia	54 (38.8)	54 (35.8)	0.058
Diabetes mellitus	37 (26.6)	27 (17.9)	0.0731
Smoking	14 (10)	38 (25)	0.0008

Table 2. Patient medications

Medications	139 patients > age 70 (%)	151 patients < age 70 (%)	P
Beta-blockers	83 (59.7)	65 (43)	0.0046
Digoxin	6 (4.3)	1 (0.7)	0.0428
Aspirin	79 (56.8)	65 (43)	0.0190
Coumadine	27 (19.4)	10 (6.6)	0.0011
Nitrates	29 (20.9)	8 (5.3)	0.0001
Diuretics	63 (45.3)	19 (12.6)	0.0001
ACE inhibitors	69 (49.6)	41 (27.1)	0.0001
Statins	81 (58.3)	65 (43)	0.0096
Ca antagonists	40 (28.8)	24 (15.9)	0.0082
Amiodarone	9 (6.5)	1 (0.7)	0.0067
Propafenone	6 (4.3)	3 (2)	0.2530
No medications	3 (2.2)	41 (27.1)	0.0001
No. of medications (mean ± SD)	3.51±1.63	1.99±1.71	0.0001
≤ 3 medications	101 (73)	55 (36)	0.0001
≤ 4 medications	70 (50)	33 (22)	0.0001
≤ 5 medications	40 (29)	11 (7)	0.0001

ACE = angiotensin-converting enzyme

aortic stenosis was the most frequent in the elderly patients, and in the cases observed all the aortic valves were calcified. Similar findings were reported by Roberts [5], that in 90% of autopsied patients aged 65 or over with aortic stenosis the

Figure 1. Percentage of patients according to age group

aortic valves were tricuspid and calcified without commissural fusion, indicating age-related degenerative calcified aortic stenosis [5].

Congestive heart failure is reported to be the most frequent diagnosis among hospitalized patients older than 65 [6]. In our clinic, only 15% of the elderly patients were diagnosed with CHF. This discrepancy is explained by the fact that patients with CHF are frequently hospitalized or sent to the emergency room instead of to the outpatient clinic at the request of their family physician since this option is often more efficient and responsive to the patient's needs.

Hypertension is the most frequent risk factor for ischemic heart disease encountered in the elderly, as reported by Burt et al. [7] in 54% of patients aged 65–74. In our elderly patients, it was present in 73.4%, double the rate of its frequency in younger patients.

The prevalence of type 2 diabetes mellitus increases with age [8]. Although it was more frequent in our elderly patients than in the younger group, it did not reach statistical significance, most probably because the number of our diabetic patients was too small.

The percentage of elderly patients who smoke was lower than that of younger patients, which is in accord with rates of smoking in the general Israeli population [9].

The elderly patients were found to be taking anti-arrhythmic drugs and coumadine more frequently than the younger patients, due to the more frequent presence of atrial fibrillation. The elderly consume a large percentage of all drugs

CHF = congestive heart failure

prescribed; three-quarters of all patients over 75 take drugs of some kind [10]. Among our patients, only 2.2% of the elderly were not on cardiac drugs compared with 27% of younger patients. About one-third of elderly patients take five or more cardiac drugs, four times more than younger patients. The number of medications has been found to be the most important risk factor for adverse drug reactions [11]. Polypharmacy in the elderly is an important issue because it can cause other pathologies; age brings an increased incidence of adverse drug effects, which occur in one-quarter of older patients [12].

Based on our findings, the multiple cardiovascular pathologies found in elderly patients and the therapeutic requirement specific to this group underscore the need to develop cardiologic educational programs in order to improve the geriatric cardiology service.

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